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STATE OF UTAH  
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DIVISION OF OIL, GAS, AND MINING  
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July 14, 1981

Mr. Richard J. Broschat  
Reclamation Scientist  
Atlas Minerals Corporation  
Big Indian Mines  
LaSal, Utah 84530

RE: Atlas Minerals  
Revegetation Test Plot  
Research Proposal  
Four Courners Mine  
ACT/015/014  
Emery County, Utah

Dear Rick:

The following comments are offered with regard to the Atlas Minerals' Revegetation Test Plot Proposal on waste rock sites.

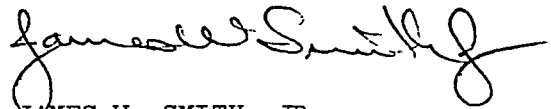
1. The study is quite acceptable and apparently feasible for evaluation of revegetation success on these particular waste rock sites.
2. To determine the quality of waste rock material as a growth medium and to justify those species selected for reclamation, data on the sodium absorption ratio and the soluble calcium, magnesium and sodium content should be included.
3. In light of the seed mix proposed, and because of the poor success of shrubs that often occurs when grasses and shrubs are seeded at the same time (especially on marginal sites), it is suggested planting shrub seedlings, and after shrub establishment, interseed with grasses.
4. In the eight-inch precipitation zone, we would suggest looking at the drought tolerance of the species as part of the criteria for selecting the species to be seeded.

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5. If it is acceptable to Atlas Minerals and within the company's policy, the Division would request that data results be made available as a reference for other operators dealing with similar waste rock materials.

Please feel free to contact Sally Kefer of my staff, or myself, with any future concerns relative to the above.

Sincerely,



JAMES W. SMITH, JR.  
COORDINATOR OF MINED  
LAND DEVELOPMENT

JWS/SK/btm